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10 CFR 50.54(f)

CNS-14-132  
January 8, 2015

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U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Duke Energy Carolina, LLC (Duke Energy)  
Catawba Nuclear Station, Units 1 and 2  
Docket Numbers 50-413 and 50-414  
Renewed License Numbers NPF-35 and NPF-52

**Subject:** Catawba Nuclear Station, Units 1 and 2 - Request for Additional Information  
Associated with Near-Term Task Force Recommendation 2.1, Seismic Hazard and  
Screening Report

**References:**

1. NRC Letter, *Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident*, dated March 12, 2012, ADAMS Accession No. ML12053A340
2. EPRI Report 1025287, *Seismic Evaluation Guidance, Screening, Prioritization and Implementation Details (SPID) for the Resolution of Fukushima Near-Term Task Force Recommendation 2.1: Seismic*, ADAMS Accession No. ML12333A170
3. NRC Letter, *Endorsement of EPRI Final Draft Report 1025287, "Seismic Evaluation Guidance"*, dated February 15, 2013, ADAMS Accession No. ML12319A074
4. NEI Letter, *Proposed Path Forward for NTTF Recommendation 2.1: Seismic Reevaluations*, dated April 9, 2013, ADAMS Accession No. ML13101A379
5. Duke Letter, *Seismic Hazard and Screening Report (CEUS Sites), Response to NRC 10 CFR 50.54(f) Request for Additional Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) regarding Recommendations 2.1, 2.3 and 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident*, dated March 31, 2014, ADAMS Accession No. ML14093A052
6. NRC Letter, *Catawba Nuclear Station, Units 1 and 2 - Request For Additional Information Associated With Near-Term Task Force Recommendation 2.1, Seismic Hazard and Screening Report*, dated November, 25, 2014, ADAMS Accession No. ML14303A192

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Ladies and Gentlemen:

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued Reference 1 to all power reactor licensees and holders of construction permits in active or deferred status. Enclosure 1 of Reference 1 requested each addressee located in the Central and Eastern United States (CEUS) to submit a Seismic Hazard Evaluation and Screening Report within 1.5 years from the date of Reference 1.

Industry guidance and detailed information to be included in the Seismic Hazard Evaluation and Screening Report submittals is provided by Reference 2. The industry guidance was endorsed by the NRC in a letter dated February 15, 2013, (Reference 3).

The Nuclear Energy Institute (NEI) submitted Reference 4 requesting NRC agreement to delay submittal of the CEUS Seismic Hazard Evaluation and Screening Report so that an update to the Electric Power Research Institute (EPRI) ground motion attenuation model could be completed and used to develop that information. NEI proposed that descriptions of subsurface materials and properties and base case velocity profiles be submitted to the NRC by September 12, 2013, with the remaining seismic hazard and screening information submitted by March 31, 2014. Catawba submitted the Seismic Screening and Hazard Report on March 31, 2014 (Reference 5).

On November 25, 2014, the NRC requested additional information (Reference 6) regarding Catawba's Seismic Hazard and Screening Report (Reference 5). The response to that request is attached.

There are no regulatory commitments associated with this letter.

Should you have any questions concerning this letter or require additional information, please contact Phil Barrett at (803) 701-4138.

I declare under penalty of perjury that the foregoing is true and correct. Executed on January 8, 2015.

Sincerely,



Kelvin Henderson  
Vice President, Catawba Nuclear Station

Attachment 1- Catawba's Response to Request for Additional Information

United States Nuclear Regulatory Commission  
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Attachment 1  
Catawba Nuclear Station, Units 1 and 2  
Response to Request for Additional Information

**REQUEST FOR ADDITIONAL INFORMATION  
NEAR-TERM TASK FORCE RECOMMENDATION 2.1  
SEISMIC HAZARD AND SCREENING REPORT  
CATAWBA NUCLEAR STATION UNITS 1 AND 2  
DOCKET NOS. 50-413 & 50-414**

By letter dated March 31, 2014 to the U.S. Nuclear Regulatory Commission (NRC), Duke Energy Carolinas, LCC (Duke) the licensee for Catawba Nuclear Station, Units 1 and 2 (Catawba), submitted for NRC review the Seismic Hazard and Screening Report, Pursuant to Title 10 of the *Code of Federal Regulations* Part 50, Section 50.54(f) (hereafter referred to as the 50.54(f) letter), Response for Information Regarding Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident.

Review of the location of the SSE control point used in the site response profile

According to the Catawba, Units 1 and 2 Final Safety Analysis Report (FSAR), the acceleration value for the Safe Shutdown Earthquake (SSE), chosen for foundations on closely jointed rock and slightly weathered rock, is 0.15 g. Section 2.3.2 of the Catawba Nuclear Station, Units 1 and 2 Seismic Hazard and Screening Report states that the SSE control point considered the inclusion of fill concrete in the site response profile.

The NRC Staff has reviewed the information submitted and has determined that the following request for additional information (RAI) below is needed to complete its review.

RAI # 1

Consistent with the 50.54(f) letter and the SPID guidance, and since the FSAR specifies the SSE control point for rock, please justify the inclusion of fill concrete in your site response profile as described in Section 2.3.2 of the Catawba Nuclear Station, Units 1 and 2 Seismic Hazard and Screening Report.

Catawba Response:

At the time of the request from EPRI for the Seismic Attenuation and Ground Motion Response Spectrum (GMRS) Study, the guidance in the SPID was not available. Therefore, the selection of the control point elevation for the site was based on the information provided in the request from EPRI and the site Updated Final Safety Analysis Report (UFSAR).

Section 2.5.2.6 of the UFSAR includes a description of the foundation conditions at the Catawba site, as well as, the definition of the safe shutdown earthquake (SSE).

Attachment 1  
Catawba Nuclear Station, Units 1 and 2  
Response to Request for Additional Information

UFSAR Section 2.5.2.6

“As stated in Section 2.5.4.8, all major Category I Powerhouse structures are supported on rock. The criteria for defining rock at this site are also discussed in that section. At a few locations, the top of continuous rock is below the design bottom of the substructure mat of significant structures [at the Reactor Building location, the continuous rock was excavated to reach the bottom of the sub-structure mat]. At those locations, fill concrete is placed to extend from the top of continuous rock up to foundation grade.

The acceleration value for the above described Safe Shutdown Earthquake, chosen for foundations on closely jointed rock and slightly weathered rock, is 0.15g. This bedrock value relates very conservatively with the design surface intensity VII-VIII MM considering the maximum observed surface intensities of VII in the region and the overburden amplification that contributed to those maximum observed surface intensities.”

As described, the concrete fill was considered an extension of the underlying rock and was used to restore the foundation elevation.

Section 2 of the EPRI request provided three options for the selection of the control point. Option 1 was not chosen because the site SSE was not defined at an elevation as discussed above. Option 3 was also not used. Instead, Option 2(a) was chosen for the site with the control point located at the deepest structure foundation elevation. Option 2(b) was not applicable as Catawba is a rock site with structures founded on rock and plant grade is at the top of soil fill.

In addition, the final paragraph in Section 2 of the EPRI request included the following guidance:

“Single soil profile

For the purposes of the site amplification calculations, a single soil profile will be used for each plant that represents the best overall description of the site. It will exclude, for example, potentially unique atypical alternative profile conditions or engineered backfill beneath specific buildings. This profile is meant to represent the conditions beneath the reactor building, consistent with the GMRS. This simplification is consistent with the potential interpolation of site spectra at elevations other than defined control points. This single soil profile should be representative of the soil/rock layers beneath the containment structure.”

Based on this guidance, the control point was taken as the base of the Reactor Building foundation which is at the top of any fill concrete. In addition, a single shear wave velocity profile was created as the average of the Unit 1 and Unit 2 shear wave velocity profiles.

The site is working on the risk evaluation as part of the response to NTF 2.1 Seismic. Although most of the probabilistic seismic hazard analysis (PSHA) work has been completed for this effort, the site plans to redo this work. In concurrence with our fragility vendor, the site plans to redo the PSHA work and relocate the GMRS control point to the top of excavated rock in accordance with the SPID section 2.4.2 .